



## Emerging adults' treatment outcomes in relation to 12-step mutual-help attendance and active involvement

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### ABSTRACT

**Background:** Participation in Alcoholics Anonymous (AA) and Narcotics Anonymous (NA) during and following treatment has been found to confer recovery-related benefit among adults and adolescents, but little is known about emerging adults (18–24 years). This transitional life-stage is distinctive for greater distress, higher density of psychopathology, and poorer treatment and continuing care compliance. Greater knowledge would inform the utility of treatment referrals to 12-step organizations for this age-group.

**Methods:** Emerging adults ( $N = 303$ ; 18–24 years; 26% female; 95% White; 51% comorbid [SCID-derived] axis I disorders) enrolled in a naturalistic study of residential treatment effectiveness assessed at intake, 3, 6, and 12 months on 12-step attendance and involvement and treatment outcomes (percent days abstinent [PDA]; percent days heavy drinking [PDHD]). Lagged hierarchical linear models (HLMs) tested whether attendance and involvement conferred recovery benefits, controlling for a variety of confounds.

**Results:** The percentage attending 12-step meetings prior to treatment (36%) rose sharply at 3 months (89%), was maintained at 6 months (82%), but declined at 12 months (76%). Average attendance peaked at about 3 times per week at 3 months dropping to just over once per week at 12 months. Initially high, but similarly diminishing, levels of active 12-step involvement were also observed. Lagged HLMs found beneficial effects for attendance, but stronger effects, which increased over time, for active involvement. Several active 12-step involvement indices were associated individually with outcome benefits.

**Conclusions:** Ubiquitous 12-step organizations may provide a supportive recovery context for this high-risk population at a developmental stage where non-using/sober peers are at a premium.

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### 1. Introduction

Compared to other life-stages, the developmental phase of emerging adulthood (18–24 years; Arnett, 2000) confers the highest risk for the onset of harmful alcohol and other drug use, as well as substance use disorder (SUD; Substance Abuse and Mental Health Services Administration, 2011). In the United States, for example, the rate of SUD among emerging adults is 20.0%, compared to 7.0% among adolescents and 7.3% among adults aged 26 and older (Substance Abuse and Mental Health Services Administration, 2011). Many emerging adults who meet criteria for SUD remit without formal treatment; however, others experience problems chronically over years and decades (Brown and Ramo, 2006; Dennis et al., 2005).

Social context factors, particularly situations in which individuals are exposed to drug/alcohol cues and abstinence-specific support is absent, have been shown to exert negative influence that lengthens the time to remission (Kelly et al., 2010a,b; Moos, 2007; Moos and Moos, 2004; Stout et al., 2012). Because regular and intensive use of alcohol and illicit drugs is more common during emerging adulthood than at any other stage of human development (Substance Abuse and Mental Health Services Administration, 2011), locating and accessing sobriety-supportive social contexts during this life stage is more challenging for emerging adults seeking recovery.

#### 1.1. Role of mutual-help organizations as recovery-supportive social contexts

It has long been recognized that among treatment-seeking individual some form of ongoing monitoring and management aids recovery efforts (Dennis and Scott, 2012; McLellan et al., 2000; Moos and Moos, 2006; White, 2008). Mutual-help groups, such

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as Alcoholics Anonymous (AA) and Narcotics Anonymous (NA), are ubiquitous community recovery resources in the U.S. and in many other countries (Mäkela, 1996) and potentially could provide emerging adults with a locatable, accessible, higher density source of ongoing recovery management and support (Humphreys et al., 2004; Kelly and Yeterian, 2008, 2012). Importantly, a major mechanism through which 12-step organizations has been shown to aid SUD recovery is by facilitating adaptive changes in individuals' social networks (Humphreys and Noke, 1997; Kaskutas et al., 2002; Kelly et al., 2010a,b, 2012). These network changes may reduce exposure to alcohol/drug cues and increase pleasant sober activities (Kelly and Yeterian, 2012). Perhaps in recognition of this, the majority of treatment programs in the U.S. attempts to link patients with community 12-step organizations (Kelly and Yeterian, 2008; Knudsen et al., 2008). However, whereas studies in this area reveal beneficial effects from post-treatment community 12-step participation for adults (Emrick et al., 1993; Kaskutas, 2009; Moos and Moos, 2006; Timko et al., 2000; Tonigan et al., 1996), comparatively little is known about their effects among adolescents (Kelly and Myers, 2007; Mundt et al., 2012; Sussman et al., 2008) or emerging adults.

Available research suggests emerging adults attend less often and discontinue sooner than older adults, but similar to older adults, attendance is associated with better outcomes. One 12-month study compared emerging adults (18–25 years;  $n=98$ ) to older adults (26 years+;  $n=922$ ) and found emerging adults were less likely to attend AA, and those who did, attended about half as many meetings and had lower affiliation and declined more quickly in the frequency and intensity of attendance over time (Mason and Luckey, 2003). A 7-year follow-up of a community/treatment sample of emerging adults with problem drinking/dependence ( $n=265$ ) who were part of a larger cohort, found AA attendance was one of the few positive predictors of salutary alcohol changes (Delucchi et al., 2008) and an 8-year follow-up of adolescents across the transition to emerging adulthood found significant AA/NA-related recovery benefits (Kelly et al., 2008). Given the high prevalence of substance use during emerging adulthood and the lack of available evidence, more research is needed to inform 12-step continuing care recommendations.

The current study assesses the degree to which emerging adults attend 12-step meetings and whether attendance is related to better outcomes over 1-year following residential treatment. It also investigates the extent to which emerging adults become *actively* involved in 12-step organizations (e.g., meet with a sponsor; verbally participate during meetings). Such indices of involvement are important to 12-step theory, as they are deemed vital in expediting social engagement (e.g., *Alcoholics Anonymous*, 1953, p. 61). They represent key 12-step activities that are featured prominently within the AA and NA literatures (e.g., *Alcoholics Anonymous*, 1984, 2001; *Narcotics Anonymous*, 1996) and that are prescribed by therapists in treatment (Humphreys and Noke, 1997; Kaskutas et al., 2009; Kelly and Urbanoski, 2012). Extrapolating from prior research, it was hypothesized that more frequent 12-step attendance would lead to better outcomes, and derived benefits would be enhanced by active 12-step involvement.

## 2. Methods

### 2.1. Participants

Participants were emerging adults ( $N=303$ ; 18–24 years) entering a private residential SUD treatment program in the U.S. Midwest. A total of 607 emerging adults were admitted during the recruitment period (October 2006 to March 2008). To ensure sufficient representation of all ages within the target range (18–24 years), a stratified sampling procedure was used to select potential participants. All patients aged 21–24 years and every second patient aged 18–20 were approached for the study. Of those approached ( $n=384$ ), 64 declined. Reasons for non-participation included not wanting to participate in the follow-ups (44%), not interested (31%),

wanting to focus on treatment (14%), and legal issues (2%). Following enrollment, an additional 17 participants withdrew prior to baseline assessment. The final sample of 303 represents 78.9% of those approached.

Average age was 20.4 years ( $SD=1.6$ ). Participants were predominantly male (73.9%) and all were single. Most were Caucasian (94.7%); 1.7% identified as American Indian, 1.3% identified as African American, and 1.0% as Asian (1.4% reported "other" or missing). At admission, 24.1% were employed full- or part-time, and 31.7% were students. Most had completed high school: 43.6% had a high school diploma and 39.6% had attended college. All youth met criteria for DSM-IV substance use disorder with the most common primary substance used being alcohol (28.1%) or marijuana (28.1%), followed by heroin or other opiates (22.4%), cocaine or crack (12.2%), and amphetamines (5.9%). In terms of severity of dependence, the average Leeds Dependence Questionnaire (LDQ) score (see Section 2.4) at baseline was 18.7 ( $SD=8.7$ ) in this sample, similar to the mean of 19.7 in a larger clinical sample of older adults with alcohol/opiate dependence (Heather et al., 2001). The prevalence of concurrent (past year) co-occurring Axis I disorders (other than SUD) was 51.2%, similar to other prevalence estimates of youth in SUD treatment (Kelly et al., 2010a,b; Langenbach et al., 2010; Schroder et al., 2008).

In terms of representativeness among U.S. treatment programs, participants were more likely to be Caucasian than other 18–24 year olds treated in public sector residential treatment (76%; SAMHSA, 2009) or adults (18+) in private sector treatment (71%; Roman and Johnson, 2004). They were comparable in terms of gender, marital status, and employment (Roman and Johnson, 2004). Regarding treatment payment source, 61% was from insurance and 35% from family. Also, 34% of the sample came from areas with households below the U.S. median household income (\$50,221); 50% of the sample came from households in areas where the median household income was below \$56,000.

### 2.2. Treatment

Treatment was based on an eclectic and multidisciplinary residential approach for SUD, based on the abstinence-based, 12-step, framework of AA (McElrath, 1997). Services were comprehensive and multi-faceted, employing evidence-based interventions based in twelve step facilitation, motivational, cognitive-behavioral, and family therapy approaches. Programming included clinical assessment, individual and group therapy, and specialty groups, such as relapse prevention, anger management, eating issues, dual disorders, gender issues, and trauma. Integrated mental health care was available on-site, including assessment, therapy, and medication management. Average length of stay was 25.6 days ( $SD=5.7$ , ranging from 4 to 35 days). The majority (83.8%) was discharged with staff approval.

### 2.3. Procedure

Research staff conducted assessments at intake, discharge, and at 3, 6, and 12 months post-discharge. Interviews were completed in person or by telephone, and self-administered surveys completed online or returned by mail. Participants were reimbursed \$30 for the baseline, discharge, and 3-month follow-ups, and \$40 for the 6- and 12-month assessments. Follow-up rates were 87.1% ( $n=264$ ) at discharge, 81.8% ( $n=248$ ) at 3 months, 72.28% ( $n=219$ ) at 6 months, and 70.63% ( $n=214$ ) at 12 months. The study was conducted in accordance with an independent Institutional Review Board at Schulmann Associates.

### 2.4. Measures

**Demographics.** Demographic characteristics, including age, gender, ethnicity, education, and marital status, and drug of choice were abstracted for the study from patients' records.

**Twelve-step participation** was measured at each assessment timepoint using the Multidimensional Mutual-help Meeting Activity Scale (Kelly et al., 2011). This provided in-depth information on mutual-help group participation across three dimensions of involvement: (i) meeting participation (e.g., active engagement in meetings, such as verbal participation or helping set up/run meetings); (ii) fellowship involvement (i.e., considering self a fellowship member, active engagement in fellowship and activities, such as obtaining a sponsor, sponsor contact outside of meetings, contact with other members outside of meetings); (iii) step work (i.e., progress working through the 12-step program). These data were used to derive a summary index of active involvement based on the sum of 8 dichotomous indicators: consider yourself a member, have a sponsor, contacted your sponsor outside of meetings, contacted other members outside of meetings, read 12-step literature outside of meetings, talked or shared during meetings, helped to set up or run meetings, and completed any steps. Internal consistency of the composite measure was high (Kuder–Richardson Formula 20: 0 months = 0.87, 3 months = 0.88, 6 months = 0.88, 12 months = 0.95).

**Psychological distress** was measured at admission, mid-treatment, and discharge with the Global Severity Index (GSI) of the 18-item Brief Symptom Inventory (BSI-18; Derogatis, 2001). Items were rated on a 5-point scale measuring past-week distress. Raw scores were converted to standardized  $T$  scores ( $M=50$ ,  $SD=10$ ) using published gender-specific community norms (Derogatis, 2001). The measure has shown good internal and test–retest reliability (coefficients = .74–.89), and construct validity in

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